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THE CHANGING STRATEGIC BALANCE AND US DEFENSE PLANNING
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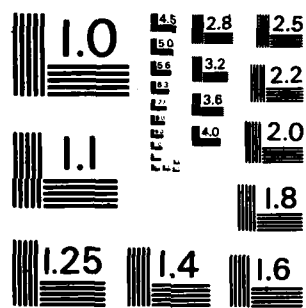
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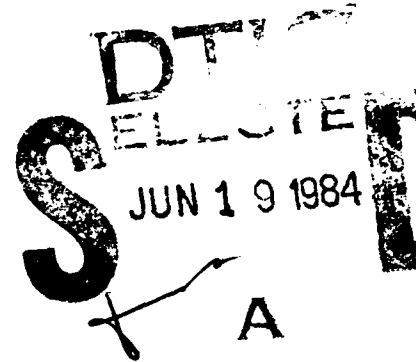
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STRATEGIC STUDIES INSTITUTE
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**THE CHANGING STRATEGIC BALANCE
AND US DEFENSE PLANNING**



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**STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
Carlisle Barracks, Pennsylvania**

**THE CHANGING STRATEGIC BALANCE
AND US DEFENSE PLANNING**

by

Robert Kennedy

1 February 1984

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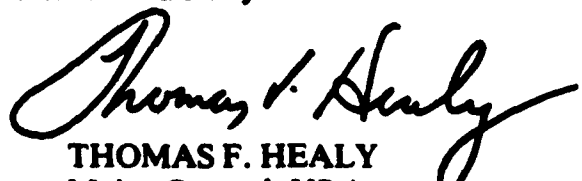
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FOREWORD

Concern has been growing over Soviet strategic capabilities and the motives behind the Soviet force buildup for more than a decade and a half. This Strategic Issues Research Memorandum evaluates the nature and objectives of this unrelenting increase.

Dr. Robert Kennedy, Professor of Military Strategy, concludes that while the Soviet Union may be seeking some "margin of superiority," deterrence of nuclear war remains a preeminent Soviet objective. The author further concludes that while US strategic retaliatory forces have become more vulnerable to a Soviet preemptive attack, the Soviet Union does not yet have the capacity to execute a disarming "first-strike." Nevertheless, the United States must modernize its strategic forces and engage the Soviet Union in arms control efforts if future strategic instabilities are to be avoided.

The US Army War College is pleased to offer this analysis of the US-Soviet strategic nuclear relationship as a contribution to the field of national security research and study.


THOMAS F. HEALY
Major General, US Army
Commandant, US Army War College



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BIOGRAPHICAL SKETCH OF THE AUTHOR

ROBERT KENNEDY, Ph.D., is currently the Professor of Military Strategy in the Department of National Security at the US Army War College. A graduate of the US Air Force Academy, Dr. Kennedy completed his graduate work in political science at Georgetown University. Dr. Kennedy served on active duty briefly with the Army and then with the Air Force from 1958 to 1971 and is currently a reserve officer. Prior to his present position, he was a senior researcher at the Strategic Studies Institute.

SUMMARY

In March 1982 President Reagan, addressing the US-Soviet strategic nuclear relationship, asserted that the Soviet Union had achieved a "definite margin of superiority." The President's remark capped a decade and a half of increasing concern over growing Soviet strategic capabilities and the motives behind the Soviet force buildup.

Some defense analysts had argued that the Soviet Union was actively seeking strategic superiority and preparing for nuclear war and that Soviet strategists had rejected American prescriptions for deterrence and were now calling for victory not deterrence, superiority not sufficiency in weapons, and offensive action not retaliation. They further contended that, as a result of Soviet improvements in the accuracy of their heavy throw-weight missiles, the Kremlin had the capacity to destroy preemptively all but a few US ICBMs as well as a large portion of our bombers on the ground and submarines in port.

The evidence at hand, however, does not support such pessimistic conclusions. While the Soviet Union may be seeking some form of strategic superiority, deterrence of nuclear war remains a preeminent Soviet objective. Moreover, despite improvements in Soviet strategic nuclear capabilities, the Soviet Union does not yet have the capacity to execute a disarming first strike.

Nevertheless, US retaliatory forces are becoming more vulnerable. Hence, America must begin now to reduce the vulnerabilities of its strategic arsenal. To this end, the United States should replace its current fixed-silo land-based missile force with mobile missiles, modernize its SLBM force and look to a future ballistic missile submarine fleet which is greater in numbers and carries smaller, single-warhead missiles, replace older B-52s with the B-1 and eventually with a force that incorporates stealth technologies, and take those steps necessary to insure the survivability of its strategic command, control and communication nets.

The United States should also continue its efforts to reach satisfactory arms control agreements with the Soviet Union. Today, the arsenals of the superpowers have reached levels on which genuine security increasingly will depend not just on force planning, but on arms control.

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THE CHANGING STRATEGIC BALANCE AND US DEFENSE PLANNING

On March 31, 1982 President Reagan, addressing the US-Soviet strategic nuclear relationship, asserted that the Soviet Union had achieved a "definite margin of superiority."¹ Previous presidents had been concerned about the growth of the Soviet strategic arsenal. Indeed, President Reagan had warned earlier that the United States was entering a period known as the "window of vulnerability,"² in which its land-based missile forces would be increasingly vulnerable to a Soviet preemptive first strike. This was, however, the first time an American president had suggested that the United States had actually fallen behind the Soviet Union in strategic might.

The President's assessment was quickly challenged.³ James R. Schlesinger, Secretary of Defense during the Ford Administration, and Zbigniew Brzezinski, National Security Advisor to President Carter, felt that the President had overstated the case. Dr. Schlesinger, noting the differences in the strategic arsenals of the two superpowers, said that these differences made it virtually impossible to determine which side was stronger. He said, "Neither side has superiority. It is a standoff."⁴ Similarly, Dr. Brzezinski stated that "the situation is one of ambiguous equivalence."⁵ Even Senator Henry Jackson, known for his tough stance toward the Soviet Union and strong support for defense, criticized the

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President, arguing that US quantitative advantages in bombers and nuclear [weapons aboard] missile carry submarines balanced Soviet advantages in heavy intercontinental ballistic missiles (ICBMs).⁶ Despite such criticisms, the President's remark seemed to lend credibility to those who had warned that, as a result of the inadequate defense policies of previous administrations, the United States was rapidly becoming the inferior superpower.

The United States, indeed the entire Western world, had watched apprehensively the development of Soviet nuclear capabilities ever since the USSR exploded its first atomic weapon in 1949. From the mid- to late 1960's, however, the unrelenting building of Soviet strategic power has been viewed with increasing alarm. Indeed, in the latter years of the Carter presidency, while the administration maintained that US and Soviet strategic forces were roughly equal in strategic capability, official statements reflected a mounting uneasiness over Soviet intentions and strategic capabilities and emphasized the need to modernize US strategic forces in order to reduce the vulnerability of these forces to preemptive attack.⁷ Thus, President Reagan's assessment brought to sharp focus more than a decade and a half of increasing concern over the implications of the growing Soviet strategic arsenal.

SOVIET INTENTIONS

The current debate over Soviet strategic objectives can be traced to the findings of the so-called Team B, a team of "outsiders" which was asked to assist in the preparation of the 1976 National Intelligence Estimate (NIE) on the Soviet Union.⁸ According to the newspaper reports, the 1976 NIE stated flatly that, in the majority's view, the Soviet Union was seeking strategic superiority. This judgment ran counter to all previous national estimates of Soviet intentions since 1950, which had apparently concluded the Soviet Union was seeking rough parity.⁹ It also appeared to contradict those who had argued that the Soviet Union had accepted some variant of MAD with its emphasis on deterrence and stability.

The NIE reflected, in part, a number of concerns increasingly voiced by Major General George J. Keegan, Jr., Paul Nitze and others in and outside of government. General Keegan, then Chief of Air Force Intelligence, intrigued by the findings of Albert

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Wohlstetter in his "Legends of the Strategic Arms Race"¹⁰ and reflecting on the evidence that Air Force Intelligence had assembled, had been arguing that a formal audit be conducted of every NIE produced since the first. He believed that such an audit would reveal that the intelligence community not only had consistently underestimated Soviet strategic nuclear capabilities (as Wohlstetter had contended), but that such an audit would reveal that the Soviet Union was pursuing superiority.¹¹

Like Keegan, Paul Nitze was also becoming concerned over growing Soviet strategic power. Nitze, who had served as a member of the US SALT delegation from 1969 to 1974 and as Deputy Secretary of Defense for two years before that, had been skeptical of Soviet intentions since the days of NSC-68.¹² As Soviet strategic power continued to grow so did Nitze's concern over the US inability to understand and meet the challenge. In March 1976 Nitze and others of similar mind formed the Committee on the Present Danger. Nitze was designated chairman of the Committee's policy studies and in its first statement the Committee made clear its view of Soviet intentions. The Committee warned that the principal threat to world peace was the Soviet drive for dominance based on an unparalleled military buildup.¹³ Nitze believed that the SALT II Agreement then being fashioned was an inadequate constraint on the Soviet Union's strategic nuclear capabilities. He also believed that the Soviet Union was pursuing a war-winning capability designed to give them a strategic advantage they would be "duty bound" to exploit.¹⁴

In the wake of his participation on Team B, Professor Richard Pipes offered further support for such views. In a seminal piece in *Commentary* in 1977, Pipes suggested that differences between American and Soviet strategies are traceable to different conceptions of the role of conflict and its inevitable concomitant, violence in human relations; and secondly to different functions which the military establishment performs in the two societies.¹⁵ He contended that

The Soviet ruling elite regards conflict and violence as natural regulators of all human affairs: wars between nations, in its view, represent only a variant of wars between classes....¹⁶

The strategic implications of such a view of conflict, according to Pipes, is a rejection by Soviet leadership of the Western view that nuclear war is unthinkable and that the application of force is

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prima facie evidence of failure of rational analysis and patient negotiations. Rather, according to Pipes, the Soviet Union views war, even nuclear warfare, according to Clausewitz's classic dictum—that war is politics pursued by other means.

Pipes further argued that support within the Soviet Union for large offensive forces and the rejection of the theory of mutual deterrence is driven by a combination of political, institutional, and technical factors. Lacking a tradition and a popular mandate, the Soviet elite needs and wants a large armed forces which serve as the mainstay of the regime's authority. At a time when its ideology is declining in appeal and its goods are noncompetitive in world markets, the Soviet Union sees large forces as the principal instrument of its external policies.¹⁷ For this reason alone, Pipes argued

...the Soviet leadership could not accept the theory of mutual deterrence. After all, this theory, pushed to its logical conclusion, means that a country can rely for its security on a finite number of nuclear warheads and on an appropriate quantity of delivery vehicles; so that, apart perhaps from some small mobile forces needed for local actions, the large and costly traditional military establishments can be disbanded.¹⁸

Pipes also identified other reasons that compel Soviet strategists to reject Western notions of mutual deterrence. First, mutual deterrence does not acknowledge the potential instability resulting from technological breakthroughs which may undermine a deterrent. Second, mutual deterrence is "passive." It only threatens punishment to an aggressor after he has struck. The preferable objective of physically negating an attack requires an "active defense," i.e., damage limitation through nuclear preemption. Third, the threat of a second strike may prove ineffectual. The side subject to a first strike may be deterred from retaliation by the threat of the enemy's third strike. Therefore, Pipes opined that Soviet strategists "make no secret of the fact that they regard US doctrine...as second rate." Soviet doctrine, in Pipes' view, calls for victory, not deterrence; superiority, not sufficiency in weapons; and offensive action, not retaliation.¹⁹

SOVIET INTENTIONS: AN ALTERNATE VIEW

Must one interpret current Soviet force postures and strategic weapons programs in the manner of Pipes and others? Must one

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conclude, as has Colin Gray, that the Soviet Union does not seem to believe in "crisis stability?"²⁰ Indeed, the weight of evidence in open Soviet literature suggests the contrary.

Soviet thinking on war has undergone evolutionary development. Following the emergence of the Soviet socialist state, Communist dogma generally held that war between rival social systems was inevitable. Lenin underscored this point.

We are living not merely in a state, but in a system of states, and it is inconceivable for the Soviet Republic to exist alongside of the imperialist states for any length of time. One or the other must triumph in the end. And before the end comes there will have to be a series of frightful collisions between the Soviet Republic and the bourgeois states.²¹

Lenin further embraced the Clausewitzian dictum that war is a continuation of politics by other measures. War was viewed as a catalyst for the inevitable advance of socialism throughout the world.

The advent of the nuclear weapon, however, had a substantial impact on Soviet thinking. By the mid-1950's, concern was being expressed over the implications of the "inevitable conflict" in the nuclear age. In 1954, Soviet Premier Georgiy Malenkov wrote that nuclear warfare could result in the mutual destruction of both the capitalist and communist societies²² and therefore warranted a serious reconsideration of the Leninist conception of war as precursor of world revolution. While Nikita Khrushchev initially opposed Malenkov's unorthodox views, by 1961, he warned that "within 60 days of an atomic attack 500 million to 750 million people could perish." Khrushchev concluded that a "sober calculation of the inevitable consequence of nuclear war is an indispensable requirement for pursuing a consistent policy of preventing war."²³

Since then, the avoidance of strategic nuclear conflict has become a central theme of Soviet public policy.²⁴ War no longer is considered an inevitable consequence of the struggle between diverging social systems.²⁵ Rather than believing that nuclear war is a "feasible instrument" of policy, Soviet civilian and military analysts have come to view strategic nuclear conflict as an enormously dangerous endeavor with a high potential for unprecedented disaster.²⁶ Fritz Ermarth has noted that

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For a generation, the relevant elites of both the United States and the Soviet Union have agreed that an unlimited strategic nuclear war would be a sociopolitical disaster of immense proportions.²⁷

The Soviet delegation, in its prepared statement presented at the first business meeting of the two SALT delegations in Helsinki in November 1969, expressed the then official Soviet view, one strikingly similar to the US assured destruction precept:

...even in the event that one of the sides were the first subjected to attack, it would undoubtedly retain the ability to inflict a retaliatory strike of crushing power. Thus, evidently, we all agree that war between our two countries would be disastrous for both sides. And it would be tantamount to suicide for the ones who decided to start such a war.²⁸

Since then, senior Soviet leadership has expressed similar views.²⁹ What then is it that accounts for the seemingly different American and Soviet force postures and strategic doctrine?³⁰ Dennis Ross has offered one answer:

...the fact that there is a general distinctiveness between Soviet strategic nuclear doctrine and American deterrence perspectives...should not be taken to mean that deterrence is not the Soviet military's primary mission.³¹

Ross argued that while the United States has adopted an approach to deterrence based on the promise of punishing an aggressor should deterrence fail, the Soviet Union has opted for deterrence through denying the enemy any possibility of a military success.³² John Erickson and Robert Legvold hold similar although not identical views. Erickson writes that for the Soviet Union, defense and deterrence go hand in hand. Military power is seen by Soviet leadership as a major instrument for impressing the "imperialist camp" that military means cannot solve the historical struggle between the two opposing social systems. Erickson concludes that in the context of deterrent theory, the United States has embraced a concept of "deterrence by punishment," while the Soviet position is one of "deterrence by denial."³³ Similarly, Legvold has written that deterrence, "For the Soviet Union is a residual concept, an effect produced by performing other primary tasks as well, tasks involving a deft foreign policy and a carefully prepared defense."³⁴

Indeed, rather than signaling a rejection of deterrence as Pipes has suggested, current Soviet force postures and strategic doctrine reflect a different approach to a deterrence and strategic planning.

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Soviet theoreticians view complex American concepts of deterrence, extended deterrence, limited nuclear options, intrawar deterrence, and deescalation as attempts to impose those rules of crises and conflict behavior that maximize the advantages enjoyed by the United States, while minimizing Soviet capabilities.³³ Moreover, they consider such concepts to be dangerously destabilizing. Instead of controlling escalation during crisis or conflict, Soviet leaders view Western concepts of deterrence as making more likely the use of nuclear weapons, and thus as contributing to the potential for that very devastating nuclear exchange which both they and the United States wish to avoid.

In other words, the Soviet elites have rejected specific American conceptualizations of deterrence. Instead they have concluded that deterrence of nuclear conflict is best served by strategic doctrines and carefully prepared strategic forces which promise to deny a potential aggressor any hope of success. Such a deterrent demands not only an active capacity to attack the enemy's war-fighting capability, but also an ability to blunt the enemy's attack through home defense measures. On this, highly regarded Rand analyst, Benjamin Lambeth, who specializes in Soviet political and military affairs, has written:

...although Soviet forces and concepts reflect an undeniable combat orientation, their principal purpose remains deterrence rather than war. The fact that, through tradition and preference the Soviets have sought security in hedges against failures of deterrence...in no way bespeaks any underlying predisposition to put those hedges to the test.³⁴

Such an approach to deterrence would be consistent with Soviet ideological predispositions. The Soviet Union believes nuclear war is possible so long as "imperialism" exists. While Soviet leaders have discarded Lenin's and Stalin's views concerning the inevitability of conflict, they believe that inevitable Socialist successes may make the "imperialists" desperate enough to unleash a nuclear war, believing they can reverse the course of history.

Deterrence through denial also would be congruent with Soviet political and institutional pressures for large armed forces and conceptually consistent with traditional military approaches to potential conflicts. On the first point, the forces required to insure deterrence through punishment can be empirically determined, and thus be limited to those necessary to inflict a specific degree of

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punishment. But the forces required for a denial strategy are likely to be more open-ended, as they always require a greater quantity than foreseen in the most pessimistic estimates of the adversary's future capabilities. On the second point, a deterrent posture that calls for war-winning and damage-limiting capabilities is consistent with traditional views of the military missions of insuring success in warfare and protecting populations and government structures.

Finally, such a Soviet approach to deterrence is reminiscent of the one so often advocated in the United States during the 1950's and early 1960's.³⁷ Indeed, it is not unlike the approach taken by those who have argued the case for the further development of US counterforce capabilities since then.³⁸ Nor is it unlike the rationale that has driven US strategic targeting doctrine as reflected in the US Single Integrated Operational Plan (SIOP) for over two decades. On this point, Harold Brown noted in his Annual Report for fiscal year 1981:

It has never been US policy to limit ourselves to massive counter-city options in retaliation, nor have our plans been so circumscribed. For nearly 20 years, we have explicitly included a range of employment options—against military as well as non-military targets—in our strategic nuclear employment planning.”

He went on to note that there was no contradiction between such an attention to militarily effective war-fighting capabilities and our “primary and overriding policy of deterrence.” According to Brown:

Deterrence, by definition, depends on shaping an adversary's prediction of the likely outcome of a war. Our surest deterrent is our capability to deny gain from aggression (by any measure of gain)...“

To argue that Soviet leaders reject nuclear warfare as a “feasible” instrument of policy and consider deterrence of nuclear conflict a paramount political and military objective is not to suggest that they reject the notion that strategic superiority, or at least the appearance of superiority, may yield tangible political benefits. Nor is it to suggest that the Soviet Union does not view military power as *a*, if not *the*, central instrument in its plans to shape the world in its own image. Soviet leaders may not be seeking active strategic superiority to execute a comprehensive preemptive first strike. Indeed some Soviet theorists contend that such a

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capability is unattainable, given the diversity of forces available to the United States.⁴¹ However, the Kremlin does believe the United States enjoyed a measure of political leverage during the period of its unquestioned strategic superiority. Soviet leaders also believe military advantage creates political opportunity in what is surely a continuing long-term struggle to preserve their interests and extend their influence throughout the world.⁴²

Furthermore, to argue that the Soviets emphasize deterrence is not to suggest that a deterrence which relies on damage limitation and an active capacity to attack the enemy's war-fighting capabilities is nonthreatening. Unchecked, such a deterrent capability may lead Soviet leaders to believe that the Soviets could successfully eliminate a large portion of America's retaliatory capability before it was launched and could further reduce damage to the Soviet Union to acceptable levels through civil and air defense measures. As a result, Soviet leadership may be emboldened as the Soviets come to believe that they possess some measure of "escalation dominance." More importantly, however, during a severe crisis, when confronted with what they may perceive as an imminent strategic exchange, Soviet leaders might be tempted to initiate a strategic nuclear exchange that otherwise might have been avoided.

Any Soviet decision to resort to the use of nuclear weapons, however, would depend on the capabilities of their strategic forces as well as on relative US and Soviet vulnerabilities. Therefore, let us now turn our attention to Soviet strategic capabilities and the uncertainties that would confront Soviet leaders in a strategic crisis.

SOVIET CAPABILITIES

To even the casual observer, it is patently clear that the relative balance of strategic nuclear power has changed drastically over the last twenty years. In November 1963, the International Institute for Strategic Studies (IISS) reported in its annual tabulations of the American and Soviet military balance that the USSR had about 100 single warhead ICBMs, about 190 Bear and Bison strategic aircraft, and 30 or so missile carrying submarines. The in-service rate of their ICBMs was low. Many of their ICBMs did not have storable liquid fuel and thus had to be fueled before they could be launched. Their missile carrying submarine fleet was of questionable

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capability. Their boats were noisy and subject to detection and tracking; many had to surface to fire the two or three missiles they carried. In contrast, the United States had 234 Atlas and Titan missiles with 800 solid-fueled Minuteman ICBMs due to be in place in hardened underground silos by the middle of 1965. It also had about 1300 strategic bombers and ten nuclear submarines (SSBNs) each carrying 16 Polaris submarine launched ballistic missiles (SLBMs) capable of being fired from submerged locations, with eight more Polaris submarines scheduled to enter service before mid-1964. The balance of strategic striking power, which clearly favored the United States, led the IISS to conclude unequivocally that US strategic retaliatory forces were expected to deter war with the Soviet Union by an ability to destroy Soviet war-making potential, including nuclear strike forces, military installations, and urban society.⁴³

Over the past two decades, such a clear relative quantitative and qualitative advantage has disappeared. Today, the Soviet Union has 1398 ICBM launchers, over half of which are newer generation SS-17s, SS-18s, and SS-19s. These new missiles, at the forefront of ICBM technology, have a high in-service rate, can be held on alert for lengthy periods of time, are highly accurate, and are housed in hardened missile silos. Moreover, many of these new missiles have been equipped with multiple independently targetable reentry vehicles (MIRVs) and are thus capable of delivering, in some cases, as many as ten warheads on separate targets.

The USSR ballistic missile carrying submarine fleet also has been vastly improved. In the 1970's the Soviet Union first deployed its long-range (7800 Km) SS-N-8 SLBM and later the MIRVed SS-N-18 SLBM on nuclear powered Delta-class submarines. In 1979, the Soviets tested the new MIRVed SS-NX-20 SLBM which will be deployed on the new Typhoon-class SSBN.⁴⁴

The Soviet Union also has deployed over 70 BACKFIRE bombers and is producing 30 more each year. While the BACKFIRE appears to have been given primarily theater and maritime missions, it could have a strategic capability for intercontinental attack.⁴⁵ By way of comparison, today the USSR fields 1398 ICBM and 950 SLBM launchers, and about 150 bombers, not including the BACKFIRE. The United States has about 1045 ICBM and 576 SLBM launchers, and about 300 bombers. Admittedly, the United States still maintains a slim lead

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in the total number of strategic warheads, but this lead is quickly disappearing.

Such static measures of US-Soviet strategic capabilities, while of concern, have not been so troubling as Soviet technological improvements in missile accuracy and the MIRVing of Soviet heavy throw-weight missiles. Such capabilities have focused attention once again on the potential for a successful Soviet "first-strike" on US retaliatory forces.

Concern over the growing vulnerabilities of US strategic forces led the United States to harden its missile forces and place some of its bombers on airborne alert in the early 1960's. Before the era of MIRV and high accuracy ICBMs, however, conventional wisdom held that the Russians would have to fire two or three missiles in order to have a high confidence of destroying one US ICBM in its silo. Thus, the Soviet Union would have had to expend its entire strategic missile force to destroy only a portion of the US land-based deterrent. Today, however, with the MIRVing and increased accuracy of Soviet missiles, some defense specialists argue that the Kremlin now can or soon will be able to destroy preemptively all but a few US ICBMs, as well as a large portion of our bombers on the ground and submarines in port.⁴⁶

One scenario which has become fashionable is a sequence in which the Soviet Union first explodes a number of nuclear weapons 300 miles above the continental United States. These warheads would create an electromagnetic pulse (EMP) capable of destroying unprotected electrical and electronic equipment, disrupting communications over the entire continent and potentially preventing or interrupting communications between the US National Command Authority (NCA) and US retaliatory forces. If Soviet SLBMs stationed on the east coast were used, the United States would have about seven minutes from the time of launch before communications were interrupted. Next, in an effort to pin down US missile forces, the Soviet Union would detonate a series of weapons 100 miles above US ICBM fields to generate x-rays capable of damaging or destroying US missiles during their early phases of flight. Finally, highly accurate Soviet ICBMs would arrive at US ICBM sites, bomber bases and possible dispersal locations and nuclear submarine bases.⁴⁷ In the aftermath of such an attack, it is argued, given Soviet air defenses, a possible limited antiballistic missile (ABM) capability, and Soviet civil defenses, the

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United States would have an insufficient number of surviving retaliatory forces capable of attacking meaningful military targets and would be discouraged from pursuing an irrational and futile counter-city exchange. Under such circumstances, the Soviet Union would have escalation dominance and an American president would surely seek political accommodation rather than a further extension of the war. Perhaps of equal concern, in a severe crisis a rational American president would be forced to choose between concession or destruction.

Such pessimistic conclusions, however, are deserving of further scrutiny. Calculations concerning the vulnerability of US retaliatory forces usually are based on theoretical mathematical models which consider missile accuracy, available warheads, warhead yields (usually expressed in megatons or kilotons of TNT), and target hardness (i.e., missile and silo resistance to blast, heat, radiation, and EMP). A number of intervening factors, however, seriously complicate the task of transforming *theoretical* capability into *operational* reality.

First, concerning missile reentry vehicle reliability, calculations concerning the overall performance of ICBMs and SLBMs under actual combat conditions must be projected from data on test firings under conditions unrepresentative of a wartime operational environment. As far as can be determined from the public record, the Soviet Union has never fired a strategic missile on short notice from an operational land-based silo or sea-based platform, has never fired an ICBM on a full polar trajectory, nor has it fired more than a few missiles simultaneously or in close coordination.⁴⁴ Generally speaking, greater care is taken to insure that systems function as designed and even then the record of Soviet as well as American missile tests is marked with some failures. While it is generally assumed that Soviet missile reliability is good, a fifteen percent failure rate would seriously complicate Soviet targeting. Of course, it would be possible, through the use of sophisticated surveillance techniques, to monitor the missile force during its boost, post-boost, and reentry phases so that back-up missiles could be programmed to replace those that failed. However, the strict requirements of attack timing, as we shall see below, raise serious questions about the effectiveness of such reprogramming as a method of compensating for missile malfunctions under wartime operational conditions.

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Second, a variety of factors will affect the operational accuracy of missiles fired over intercontinental ranges. Accuracy is usually measured in terms of circular error probable (CEP) or the radius of a circle in which 50 percent of the warheads can be expected to land. Today's strategic missiles rely on inertial guidance systems to maintain their trajectory along an intended track to the target. Inherent imperfections in the gyroscopes and accelerometers, positioning and alignment errors, or errors induced by vibration and shock can result in inaccuracies which although individually small can be constant and accumulating with time, as well as random. Inertial systems also rely on a mathematical model of the earth's gravity field in order to take into account the earth's gravitational pull on the missile." The earth's nonuniform sphericity, however, produces gravitational variations that could have an uncertain effect on the ballistic trajectories of warheads fired over untested polar routes. Also, thrust termination errors, upper atmospheric winds, variations in atmospheric density, anomalies in the burning rate of the reentry vehicle's ablative shield, and target positioning errors all can contribute to the uncertainties associated with missile accuracy." Much has been done by the United States, and undoubtedly by the Soviet Union, to minimize the effects of such factors. Nevertheless, a degree of uncertainty remains and will continue to remain in the absence of extensive ICBM testing over polar routes at intercontinental ranges. Unlike firings on test ranges, there is no ability to "tweak" over time the guidance packages of operational ICBMs to compensate for missile guidance biases or other errors revealed as ICBM traverse untraveled courses to attack US targets.

Third, although perhaps of less consequence, there is a degree of uncertainty associated with warhead yields as well as silo hardness. Limitations on the peacetime testing of nuclear weapons have created uncertainties not only as to the precise effects of warheads of a given yield, but also on estimates of the yield of a given class of warheads. Actual warhead yield may vary from the given yield depending the extent of testing and the accuracy of scale model interpolations. Perhaps even more uncertain have been estimates of silo hardness. Such estimates are based entirely on theoretical models and scale model testing with nonnuclear explosives. Actual hardness may vary from such theoretical calculations depending on individual silo construction anomalies and characteristics of the

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surrounding soil and rock. Indeed, from an attacker's point of view, silo hardness may be one of the more predominant uncertainties.¹¹ Even if, for example, the Soviets had access to classified US estimates of the hardness of American Minuteman silos, they more than likely would be aware of the limitations of those estimates. It is also likely that they would assume that the American estimates reflected US worst-case thinking and thus represented the low end of the spectrum of uncertainty of US silo hardness. The real point here, however, is that an unfavorable variation in Soviet warhead yield such that the actual yield at detonation were 10 percent less than expected, coupled with an unfavorable variation in US silo hardness such that actual hardness were 20 percent greater than expected, might well reduce the effectiveness of a hypothetical attack by between 10 and 15 percent.

Finally, a disarming first-strike would require monumental feats of timing. While US ICBMs indeed have become more vulnerable to a Soviet first-strike, the Scowcroft Commission noted that the diversity of land, sea, and air forces comprising the US strategic Triad renders a fully disarming simultaneous strike a virtual impossibility. US submarines at sea are essentially invulnerable to attack and are likely to remain so for a long time. They operate virtually undetected by Soviet antisubmarine warfare (ASW) forces. While in theory it may be possible some day to track nuclear submarines by satellite, that technology does not yet appear promising. Moreover, any Soviet attempt to strike US ICBM silos and bomber and submarine bases simultaneously, by delaying missile launches from close-in submarines so that such missiles would arrive at US bomber bases at the same time as Soviet ICBM warheads (with their longer time of flight) would arrive at US silos, would permit a high portion of US bombers on alert to escape their bases. On the other hand, if the Soviet Union chose to launch their ICBM and SLBM forces simultaneously in an attempt to catch US bombers before they could be launched, there would be a period of over 15 minutes between the time Soviet short time-of-flight SLBMs arrived at US bomber bases and the first Soviet ICBM warheads arrived at US ICBM silos. Under such circumstances, Soviet leadership would have no confidence that the United States would refrain from launching its entire ICBM force during the interval after US bomber bases had been struck.¹²

The problem of timing, however, extends beyond that created by America's diversity of forces. Even an attack with the limited

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objective of eliminating a large portion of the US ICBM silos would be highly uncertain. Within the first millisecond after detonation of a nuclear warhead at or in close proximity to the ground, temperatures at the earth's surface raise to several hundred thousand degrees Celsius, overpressures may exceed 100,000 pounds per square inch, and radiation that can destroy a nuclear warhead extends outward hundreds of meters. Vertical winds caused by such high temperatures and an outwardly expanding fireball and shock front reach speeds of several hundred kilometers per hour. Dust and other debris from the ground are sucked upward, rising rapidly into the upper atmosphere. As a result, where more than one warhead is required to achieve a high degree of confidence that a missile silo has been destroyed (invariably the case with today's CEPs) or where missile silos are in close proximity to one another, nuclear or thermal radiation, violent upper atmosphere winds, and debris from previous blasts may pose or may be perceived by the Soviets as posing insurmountable targeting problems."

This phenomenon is known as "fratricide." Incoming RVs might either be destroyed, neutralized, or their accuracy degraded by the effects of previous blasts. In an effort to avoid the effects of fratricide, it is usually assumed that the Soviet Union would attack southern most US silos first. Through split-second timing and a system of cross-targeting in which the RVs of each Soviet ICBM simultaneously are targeted on different US silos and every silo is covered by at least two Soviet RVs, it may be theoretically possible to minimize the impact of fratricide. However, neither superpower has much test experience with this phenomenon. Even where simultaneous detonations are planned in order to avoid fratricide, a few millisecond's delay in the arrival of an RV caused either by minor differences in warhead reentry characteristics or by the developing effects of previous downwind detonations, or even by minor variations in silo departure during launch, or guidance corrections during flight, could be enough to subject the RV to the potentially neutralizing effects of nuclear radiation and EMP. Under such circumstances, even a well-planned attack is not without its uncertainties. Moreover, follow-on attacks, including those by missiles reprogrammed to replace previous ICBMs that had malfunctioned, are highly problematical.

Such uncertainties as these seriously compound the problem of achieving the high kill probabilities that would be necessary for the

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Soviet Union to achieve a disarming first-strike. Even a successful attack on the US land-based forces is not nearly as certain as some pessimists suggest. Today, given perfect reliability and a successful two-on-one attack, a strike by Russian SS-19 MOD 3 missiles, which carry 6 warheads each with an estimated yield of 550 kilotons (kt) and a CEP of about 250 meters, would have a mathematically derived probability of destroying a US Minuteman silo hardened to 2000psi of about 86 percent. A two-on-one attack by Soviet SS-18 MOD 4 missiles which have accuracies and yields which are similar to the SS-19 but carry 10 warheads, would have a similar probability of kill.¹⁴ However, such kill probabilities are only theoretical. When all potential compounding operational factors are considered, kill probabilities are likely to diminish substantially. Indeed, it would appear that such a conclusion contributed, in part, to the Scowcroft Commission's recommendation to deploy the MX missile in US Minuteman silos.

Civil defense preparations also often have been cited to indicate a distinct Soviet advantage in event of nuclear exchange.¹⁵ Some note that in the wake of a Soviet counterforce first strike, US retaliatory forces could kill as few as 10 million people or about one-half the number of Soviet citizens lost during World War II. As a result of such calculation, it is argued, the ability of the United States to deter a Soviet first-strike is deteriorating rapidly. Indeed, some pundits contend that under such conditions in which forecasted Soviet losses might be less than those experienced from 1941 to 1945, Soviet leadership might be willing to threaten or initiate nuclear war. As a minimum, the Soviet Union might be able to exercise a degree of coercive diplomacy in a severe crisis.

However, is it really likely that Soviet leaders would initiate a conflict in which they are assured of 10 million prompt fatalities? It is one matter to find oneself engaged in a defensive conflict, not of one's choosing, which produces 20 million casualties over the course of 5 years. It is quite another matter to deliberately start a war in which 10 million fatalities, at the very least, can be expected within the first few hours of conflict and all major cities are likely to be destroyed along with, perhaps, the fabric of society. The point is that those analysts who posit Soviet victory due to such "low" losses erroneously assume that biological survival and national survival are one and the same. Indeed, the 10 million deaths suggested would not be a cross-section of Soviet society.

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Because of the nature of the Soviet target array, the ethnic Great Russians would suffer most.⁶ The postulated 10 million deaths also fail to account for those additional fatalities likely to result through military action should war continue beyond the first day. Nor do they include the millions of fatalities, casualties, or losses likely to result from fallout, disease, starvation, societal chaos or the effects of a "nuclear winter" which would certainly follow a strategic nuclear exchange. Indeed, as Carl Sagan has suggested "Except for fools and madmen, everyone knows that nuclear war would be an unprecedented human catastrophe."⁷ Moreover, it is probable that the Soviets recognize that their own civil defense efforts are not likely to alter that truth in any appreciable way. In fact, Soviet calculations concerning the impact of nuclear war on world climatic conditions produced even more pessimistic results than did those of American scientists such as Sagan and Richard Turco. According to Soviet scientists, 40 days after a nuclear exchange of 5000 megatons the clouds of dust and soot created would cause temperatures to fall as much as 100 degrees with a devastating impact on human existence.⁸

The notion that the Kremlin could exercise a degree of coercive diplomacy knowing that it might sustain as few as 10 million casualties is also misleading. Any attempt at coercion through the threat of nuclear war would provide the United States an important measure of warning for its strategic and forward-based forces. Warning would enhance force survivability, increase the military effectiveness of the US strike, and significantly increase the casualties likely to be suffered by the Soviet Union should a conflict occur. Bomber forces might be placed on airborne alert or laterally dispersed to numerous airfields. On airborne alert, they would remain essentially invulnerable to preemptive attack, while lateral dispersal would add to Soviet targeting difficulties. Ballistic missile submarines in port could be put to sea. Forward-based forces, particularly aircraft, might be vertically or laterally dispersed. The President might even consider authorizing the launch "under attack" of the ICBM force. Under such circumstances, the apparently conservative nature of Soviet defense planning is likely to induce Soviet defense specialists to make force exchange calculations that are not likely to be outweighed by the benefits of threatening to or initiating a strategic nuclear conflict.

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This analysis indicates that US and Soviet strategic forces are not in delicate balance over sharp fulcrum. Instead they are counterpoised on a broad base of uncertainties that will permit a number of force alterations on either side without cataclysmic results. While increases in accuracy will make Soviet missiles theoretically more lethal, such technical improvements are not easily translatable into operational and political advantages that can be exploited readily by the Soviet Union in the near term. Such a comparatively comforting conclusion, however, is not likely to remain valid indefinitely." American ICBMs are becoming more vulnerable to preemptive attack. Moreover, this will increasingly be the case should the Soviet Union incorporate terminal guidance capabilities on its next generation ICBMs and SLBMs. Technologies are already under study to overcome the effects of dust clouds and EMP on reentry vehicles. Indeed, much already has been done by the United States, and presumed by the Soviet Union, to harden its strategic forces to the effects of EMP. There is always the possibility of break-through in antisubmarine warfare, especially if the United States abandons the ICBM leg, thereby allowing the Soviet Union to concentrate its resources on ASW. The question confronting the United States today is how to respond to the increasing vulnerabilities of its forces, while avoiding a further escalation of the arms race and a potentially destabilizing US-Soviet force balance. Should the United State abandon the land-based missile leg of the strategic Triad? Or should it adopt a less vulnerable form of land-based basing? What is the future role of the manned bomber? Should the United States shift its strategic investment to sea-based components which are currently clearly less vulnerable?

STRATEGIC PLANNING FOR THE DECADES AHEAD

As the United States looks to the 1990's and beyond, three objectives will continue to dominate American strategic force planning: US strategic forces must continue to serve as a credible deterrent to Soviet aggression against the United States and its allies; the forces chosen must contribute to crisis stability; and, however incredible or unthinkable it may be, should deterrence fail, US forces must be structured in such a way that they contribute to conflict termination short of Armageddon. To

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accomplish these tasks the United States must reduce the vulnerabilities of its strategic retaliatory arsenal; maintain a capacity of limited nuclear options; and engage the Soviet Union in the vigorous pursuit of stability through arms control.

Reducing Vulnerabilities. America's strategic arsenal must remain capable of absorbing a Soviet first-strike and retaliating decisively. This has been a clear requirement for deterrence and stability since President Kennedy's administration formulated the first SIOP. In the past, America has relied on a combination of ICBMs, bombers, and SLBMs to accomplish these tasks. There is, however, nothing sacrosanct about the Triad. Some defense specialists have suggested that the growing vulnerabilities of certain strategic systems eventually may force the United States to abandon the Triad concept in favor of a dyad (bombers and SLBMs), or perhaps even a monad (SLBMs alone). Nevertheless, the abandonment of the ICBM or the bomber legs of the Triad would not come without cost.

The current diversity of strategic forces (land, sea, and air) serves several purposes. First, diversity provides a hedge against a technical surprise that might render one or even two legs vulnerable to preemptive attack. Force diversity also poses attack timing problems, as noted earlier, which make it difficult for the Soviets to coordinate simultaneous strikes on all three legs of the Triad. Thus, while one leg may be technically vulnerable, its elimination from the force mix would heighten the vulnerability of the remaining legs. Third, diversity provides a hedge against tactical surprise—bombers can be placed on airborne alert where they are virtually invulnerable to a preemptive attack, nuclear submarines can stay submerged and hidden for months, and the high alert rates of ICBMs allow them to be launched quickly from under attack. Finally, force diversity dilutes the ability of the Soviets to defend themselves successfully against retaliatory strikes. Hence, a balance of forces would appear to offer greater promise than a move to a dyad or monad in meeting the twin goals of deterrence and stability. What then should be done to reduce vulnerabilities?

First, the land-based component must be completely revamped. This need not be done in a panic nor in complete disregard of long-term arms control objectives. Nor should the United States sacrifice the modernization of its other military capabilities, which are likely to be called upon to protect US interests in a world

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plagued by numerous conventional and unconventional conflicts. However, planning for the eventual replacement of the entire Minuteman missile force must begin now. The prospect of reducing the vulnerability of the current Minuteman missile force through the superhardening of silos exists. The potential for a promising payoff, however, is very uncertain. As terminal guidance technologies permit missile accuracies to approach zero CEP, the probability of destroying even super-hardened silos through either a systems kill resulting from ground shock or the cataclysmic destruction of the silo will approach unity. Like other precision-guided weapons, however, precision-guided ICBMs still demand that the attacker acquire the target before killing it. Under such circumstances mobile missiles offer the most promising prospect for reducing the vulnerability of the US strategic ICBM force.

Mobility was one of the desired features of the MX program as originally conceived. The size of the MX system, however, precluded real mobility. The most promising and at the same time technologically feasible option for the land-basing of MX involved the shuttling of the MX between a number of protected shelters. The multiple protective shelter (MPS) system, however, required a limit on the development of the Soviet missile force. Otherwise the USSR would be able to increase the number of RVs in its striking force to compensate for the increase on the number of targets to be struck. Furthermore, deploying MX in multiple protective shelters over large tracts of land proved politically infeasible. As a result and in light of the Scowcroft Commission's realistic assessment of Soviet hard-target kill capabilities, a decision to deploy 100 MXs in existing Minuteman silos was made.

This decision has been criticized widely. The principal concern of MX critics, however, is that the ten highly accurate MX warheads threaten strategic stability. From a Soviet perspective, placing MX in vulnerable fixed silos suggests that the United States intends to close the "window of vulnerability" by acquiring its own disarming counterforce first-strike capability. In a severe crisis, concerned about a potential US first-strike, Soviet leaders might opt for preemption in an effort to eliminate this American threat. While it is beyond the scope of this paper to recreate the MX debate, at least two points are in order. First, the Soviet Union is likely to harbor a greater degree of apprehension over America's capability for a strike on Soviet missiles resulting from MX deployments.

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However, given the diversity of US strategic forces and the current uncertainties associated with a preemptive attack on those forces, the deployment of 100 MX missiles is not likely to alter Soviet calculations as to the potential benefits of preemption. Second, the MX missile will be no more vulnerable than the current Minuteman force, but each surviving MX will have over three times as many warheads as a surviving Minuteman III missile and many times the destructive power.

As a follow-on to the MX, the United States is developing a small, single-warhead ICBM. Nicknamed the "Midgetman," this new small ICBM (SICBM) would weigh about 15 tons rather than the nearly 100 tons of the MX and offer greater flexibility for mobile deployment. The Midgetman is not only an attempt to reduce vulnerability through mobility, but also an attempt to disinvent the MIRV which has been a principal culprit in the creation of strategic force vulnerabilities. It is inherently more costly, however, to build additional missiles than it is to build additional warheads. Thus, whether the follow-on to MX and Minuteman has a single warhead may well depend on whether the Soviets can be convinced of the inherent stability of single-warhead systems,⁶⁶ whether they are willing to spend the money in a major alteration of their strategic force arsenal, and whether adequate arms control verification procedures can be negotiated to preclude cheating. What is essential for genuine stability, however, is that US and Soviet land-based missile systems be truly mobile.

Second, the United States must also continue to modernize its SLBM force. The ballistic missile submarine force when at sea is the most survivable leg of the Triad and is likely to remain so in the foreseeable future. The new Ohio-class Trident submarines are significantly quieter than America's Poseidon SSBNs which were constructed in the 1960's. With the planned addition of the longer-ranged Trident II (D-5) missile, the United States will be capable of retaliating from greater ranges than was previously the case with the Polaris or Poseidon fleet or with the Trident I (C-4) missile. This will permit the US SSBN fleet to use the protection of a vaster expanse of the world's seas to increase its survivability. The planned deployment of the D-5 missile, however, has not been without criticism. Like the MX the principal criticism has been that the planned accuracy of the D-5 missile will permit it to destroy hardened Soviet targets. Again, like the MX such a capability is

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seen as dangerously destabilizing. Indeed, New York Representative Thomas J. Downey is reported to have complained that the D-5 is "the most destabilizing 'first-strike' weapon ever built."⁶¹

Strategic instability, however, is more a function of one's vulnerability than of the accuracy of one's missile forces. While the Soviet Union may be concerned over a growing US SLBM hard-target kill potential, there is nothing against which to preempt if US submarines cannot be located. Perhaps, the real concern is less the near-term implications for crisis stability and more the potentially destabilizing arms race at sea which might ensue as the USSR searches for ways of locating US SSBNs and the long-term implications should the seas become less opaque.

Two factors should guide future developments in the US sea-based force if such instabilities are to be avoided: the United States must avoid putting too many eggs in a single basket; and, the invulnerability of SSBNs must be preserved.

Today, a high percentage of US striking power resides in slightly more than 30 SSBNs. This will be even more the case as Ohio-class submarines with their D-5 missiles replace Poseidon submarines. Thus, while there is a high probability that the Ohio-class Trident fleet will remain invulnerable to preemptive attack into the next century, it is important that we continue to guard against future vulnerabilities and the instabilities they will beget. In this regard, the United States must look to a future nuclear submarine fleet which includes smaller boats which are hopefully less costly, but more numerous. Employing a logic similar to Midgetman, the development of a small single-warhead SLBM would make such a fleet feasible. To increase stability the Soviet Union should be encouraged to do the same. The United States should also engage the Soviet Union in a variety of discussions designed to reduce the threatening nature of SLBM deployments and to preserve, perhaps enhance, the invulnerability of SLBM forces.

Third, the United States must modernize its strategic bomber forces. Bombers are the most flexible leg of the Triad. They can be used to demonstrate US interest, concern, and determination during severe crisis situations. They can be placed on ground and airborne alert as well as launched on warning and recalled. They can make use of electronic countermeasures (ECM), evasive action, low altitude penetration tactics and standoff missiles to mitigate

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enemy air defenses. Bombers are capable of striking hardened targets such as residual or reuseable Soviet ICBM silos. They can provide post-strike reconnaissance for attack assessments. They can be moved to a theater of operations to augment theater nuclear capabilities in a severe crisis and they can be reconstituted for follow-on uses.

Bombers are also the Triad's most stabilizing element. Their long flight times preclude their use in first-strike counterforce attacks. Moreover, because airborne bombers are virtually invulnerable to a preemptive first-strike and because a large percentage of America's megatonnage is carried by bombers, an airborne alert called during a critical confrontation with the USSR might deter all forms of direct hostilities between the United States and the Soviet Union.

Nevertheless, it is frequently argued that as Soviet air defenses continue to improve and look-down/shoot-down air defense interceptors are developed, bombers no longer will be capable of penetrating to their targets. B-52s, however, successfully penetrated some of the heaviest air defenses ever assembled in the December 1972 air campaign against Hanoi; suffering less than a three percent attrition rate.²² While Soviet surface-to-air missile technologies have improved since then, so have the tactics and ECM capabilities of the US bomber force. Even these considerations may be moot in a nuclear war, however, inasmuch as Soviet SAMs and interceptor airfields would be logical candidates for early ICBM and SLBM suppression strikes. Moreover, the task of locating and subsequently attacking with interceptor aircraft bombers which are deliberately attempting to conceal their locations would not be easy. Frequently, there is a very narrow window in which to attack a penetrating aircraft and a successful reattack may not be possible following a missed intercept. This problem has been demonstrated by the Soviets in the past as they often have been unable to track and quickly intercept civilian aircraft flying obtrusive routes at high altitudes. Such problems would be severely compounded in a nuclear war. US bombers would arrive in Soviet airspace some nine hours or so after a nuclear exchange. They would be equipped with nuclear short-range attack missiles and ECM capable of destroying or disrupting remaining Soviet SAM sites and interceptor airfields. Air-launched cruise missiles would be used to attack highly defended targets. Furthermore, the communications necessary for the effective

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positioning of intercept aircraft would be severely disrupted by the effects of nuclear weapons. The task of locating penetrating aircraft would be compounded by the presence of clouds of dust and debris from previous nuclear detonations. Under such circumstances, the probability of the USSR successfully intercepting US bombers enroute to their targets is likely to be very low.

Hence, the critical question is not whether the bomber should be retained as part of the Triad. Rather, it is whether the United States should replace a portion of its B-52 fleet with the B-1 now or wait until the so-called Advanced Technology Bomber (ATB) incorporating stealth technologies is developed. The current B-52 force is a product of 1950's technology. The last B-52 rolled off the assembly line in the early 1960's. While many recent modifications have been made to the fleet to increase its ability to penetrate enemy defenses, a number of deficiencies remain. The B-1 is capable of a quick start, a short takeoff run, and rapid acceleration to escape an airbase under attack. The B-52 is not. The B-1 is hardened to survive many of the effects of nuclear blast and radiation which might be encountered as it attempts to escape a Soviet attack on US air bases. The B-52 was not designed to counter such effects. The B-1 has a smaller "footprint" and shorter takeoff roll and thus can be dispersed to a greater number of airfields than can the B-52. The B-1 incorporates the latest ECM technologies. Moreover, the B-1 is available now and the B-52 is a rapidly aging airframe.

A convincing argument can always be made to postpone modernization and its associated costs for some technologically promising future development. However, there are hazards to this. The technology may not develop at a pace fast enough to be available when replacement becomes the only real option for an aging force. Then the United States might well be left with a stealth bomber fleet which is not only invisible to the adversary, but also not visible on America's bomber bases. Moreover, the technology may not come cheaply nor represent the significant breakthrough anticipated. On the other hand, the ATB indeed may represent a significant breakthrough in stealth technology; however, the B-1 already has a radar cross-section many times smaller than the B-52. Thus, the decision to procure the B-1, to a certain degree, is a judgment call which is designed to insure that the United States has an effective bomber leg of the Triad well into the 1990's.

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Fourth, the United States must place great emphasis on insuring the survivability of its strategic command, control, and communications (C³) nets. Perhaps the most vulnerable components of our strategic retaliatory forces are the communication links that make timely retaliation possible. Soviet doctrine and nuclear warfare exercise scenarios, their emphasis on communications disruption through the use of electronic warfare, and their preoccupation with the survivability of their own command and control links suggest that the Soviet Union would devote a significant portion of attacking forces to attempts to sever the links between the President and US strategic nuclear forces in an effort to delay or disrupt a US strategic retaliatory response.

While the United States is well advised to pursue in a deliberate fashion the force modernizations identified above, certain programs on the horizon merit reconsideration. For instance, the United States should move with great caution on the development and deployment of land-attack sea-launched cruise missiles (SLCMs). The United States has been deploying Tomahawk cruise missiles to improve the striking power of its surface naval units. Although, in a strict sense, Tomahawk is not a strategic system, there is no doubt that systems such as a land-attack SLCM could play a vital strategic role, especially if deployed by the Soviet Union on ships near the American coast line. Under such circumstances there is some serious question as to whether the United States would be the net beneficiary of further deployments of modern cruise missiles. The Soviet Union has a greater number of submarines than has the United States. The USSR also has a large surface fleet upon which to deploy SLCMs. The United States has virtually no air defense capability against a large-scale cruise missile attack. It also has more targets which are close to the coastline. Thus it is potentially more vulnerable to current and near future generations of SLCMs. Moreover, once deployed it will be difficult to determine how many nuclear SLCMs the Soviet Union actually has. This would further complicate the arms control verification problem, if an agreement to monitor production closely could not be reached. Indeed, failure to seek limits on sea-launched cruise missiles may be an error of the same magnitude as the failure to limit the deployment of the MIRV.

The United States should also move cautiously in the area of strategic defense. The Scowcroft Commission recommended a

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"vigorous research and development program" on antiballistic missile (ABM) technologies to avoid technological surprise. However, the commission concluded that no ABM technologies appeared to combine "practicality, survivability, low cost, and technical sufficiency to justify proceeding beyond the stage of technology development." "Indeed, there is no certainty that the United States would be the net beneficiary of deployments of strategic defensive systems." Thus, while such deployments may eventually be necessary, arms control efforts should be exploited to avoid a future arms race of strategic defensive systems.

Maintaining a Capability for Limited Options. One of the principal difficulties of developing a strategic arsenal which not only is a credible deterrent to aggression against the United States and its allies and enhances the prospects for an early conflict termination should deterrence fail, but also contributes to crisis stability is that the forces necessary for the former frequently appear to be at odds with the requirements of the latter. For example, deterrence of Soviet aggression against America's European allies requires the Kremlin to believe that any aggression in Europe might ultimately result in a strategic exchange with the United States. This is known as the linkage concept that presents the Soviet leadership with potential costs of aggression in Europe that overwhelmingly outweigh any conceivable gains. In an age when the United States possessed an overwhelming superiority, it was reasonable for Soviet leaders to believe that the United States might deliberately initiate a nuclear war to protect Western Europe. Thus, threats of massive attacks on Soviet urban and industrial centers seemed credible enough to deter a potential Soviet aggression. Linkage, although less certain, still seemed somewhat assured even after the Soviet Union began developing a substantial nuclear capability, as long as the United States had a clear relative advantage and was perceived to have a measure of "escalation dominance." However, today, in an age of nuclear parity, or as some have suggested, increasing quantitative if not qualitative inferiority, linkage and thus deterrence depends not so much on the notion that the United States would deliberately initiate a massive nuclear war with the Soviet Union as it depends on the Soviet Union believing that the United States might use lesser options to keep Western Europe from being overrun. Deterrence further depends upon the USSR believing that despite any American

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attempts to limit or terminate conflict through such options, the force of events would lead eventually to a massive US-Soviet strategic nuclear conflagration. Similarly, should a conflict occur, the President must not be limited to all or nothing strategic options. Such options would force the President to choose between annihilation or surrender. A flexible and robust force of modern strategic weapons contributes significantly to both these objectives. By offering the President the capability for limited strikes on militarily significant targets, deterrence is strengthened and the potential for conflict limitation and eventual termination is preserved should deterrence fail.

Arms Control. The arsenals of the superpowers have reached levels in which genuine security increasingly will depend not just on force planning, but on arms control. While it will be theoretically feasible to plan and build strategic forces in the absence of arms control, such efforts are likely to result in higher levels of insecurity at increased cost. Whether the militaries of either superpower can be convinced of it or not, both the United States and the Soviet Union are highly dependent on each other for their future security. Indeed, future strategic programs designed by one side to increase strategic stability may well require the cooperation of the other if stability is to be assured. This was the case with the MX MPS system—only through an agreement which limited the number of warheads available to the Soviet Union would a multiplication of the number of targets which would have to be struck to destroy US MX missiles provide an increased measure of stability. This is likely to be the case with future systems. Arms control can contribute to crisis stability in such an environment. Arms control can also reduce pressures which if unrestrained might lead to an upwardly spiraling arms race. In this regard, a truly stable environment is likely to require: (1) a movement away from MIRVed ICBM and SLBM systems; (2) a reduction in time-urgent hard-target kill capability and perhaps a reemphasis on non-time urgent systems such as bombers; (3) a ban on terminal-homing ICBM and SLBM warheads; (4) a reduction in the total warheads deployed by each side; (5) the establishment of "safe zones" for each side's nuclear ballistic missile submarines; (6) a limitation on the future deployments of SLCMs; and (7) the avoidance of an upwardly spiraling race of antisatellite, and space and land-based strategic defense systems.

A FINAL NOTE

There is no question that the West is interested in avoiding nuclear war and the strategic instabilities that might set events in motion that could lead to a cataclysmic confrontation with the Soviet Union. There is ample evidence to suggest that despite hopes of using military power to underwrite their superpower status, the Soviet Union is also interested in stability and the avoidance of nuclear war. This is where there is convergence between the United States and the Soviet Union. Our societies are not similar nor are they becoming so. We do not share similar values and that is not likely to change in the foreseeable future. The Soviet Union has not given up on its struggle with the West nor should we expect this to happen. Nevertheless, we both share a paramount interest in avoiding nuclear war. It is upon this base that cooperative efforts to reduce strategic instabilities and the potential for war can and must be built. Such efforts, of course, should include a continuation of discussions on future limits of strategic forces. Perhaps, more importantly, they must include discussions aimed at sorting out differences in strategic doctrine and force structure and identifying those factors which threaten stability. Only then can we have some confidence that bilateral as well as unilateral actions are contributing to a long-term strategic design that will reduce the probability of nuclear war.

What is required now is reason not rhetoric, prudence not paranoia, objectivity not emotion, and above all a strategy for dealing with the Soviet Union, not a litany with its ritualistic incantations which has so far obscured rather than clarified those factors which separate the superpowers from real progress toward a stable strategic environment.

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ENDNOTES

1. "President's News Conference on Foreign and Domestic Matters," *The New York Times*, April 1, 1982, p. A-22.
2. The so-called "window of vulnerability" has been described as that period of time in the 1980's when, because of the increasing accuracy of the Soviet strategic missile force, US land-based ICBMs would be vulnerable to a disarming preemptive Soviet attack. The Soviet Union, at least in theory, so the argument goes, would be able to destroy all but a few US ICBMs with a small percentage of their own ICBM force. The remaining forces would be held in reserve to deter a US retaliatory attack. Thus, the US president confronted with the loss of his highly accurate ICBM force (potentially capable of attacking residual Soviet nuclear forces) and with highly effective Soviet air defense capability against US bombers (also potentially capable of striking residual Soviet nuclear forces) would be forced to either accede to Soviet demands or engage in a virtually suicidal counter-city exchange.
3. See for example, Robert G. Kaiser, "Critics Dispute Reagan, Say Soviets Not Superior: 'Voodoo Arms Control' Assailed by Kennedy," *The Washington Post*, April 2, 1982, p. A-1.
4. Hedrick Smith, "The Strategic Balance," *The New York Times*, April 5, 1982, p. A-7.
5. *Ibid.*, p. A-1.
6. Adam Clymer, "2 Senators Deny Soviet Arms Lead," *The New York Times*, April 5, 1982, p. A-7.
7. For example, see Harold Brown, Secretary of Defense, *Department of Defense Annual Report Fiscal Year 1981*, Washington: US Government Printing Office, January 16, 1981, pp. iv & 14.
8. The so-called "Team B" members included Richard Pipes, Professor of Russian History at Harvard; Thomas W. Wolfe of the RAND Corporation; LTG Daniel O. Graham, retired former head of the Defense Intelligence Agency; Paul D. Wolfowitz of the Arms Control and Disarmament Agency; Paul H. Nitze, former Deputy Secretary of Defense; GEN John Vogt, USAF, Retired; and Professor William Van Cleve of the University of Southern California.
9. See David Binder, "New CIA Estimate Finds Soviet Seeks Superiority in Arms," *The New York Times*, December 26, 1976, p. 1.
10. Albert Wohlschlag, "Legends of the Strategic Arms Race, Part 1: The Driving Engine," *Strategic Review*, Fall 1974, pp. 67-92.
11. While no formal audit was conducted, President Ford accepted the suggestion of his Foreign Intelligence Advisory Board which, having taken note of the concerns of Keegan and others, recommended that the views of outsiders be considered in the preparation of the NIE. It was this suggestion which led to the formation of the so-called "Team B" for the 1976 NIE. For a summary of some of the concerns voiced by Keegan, see MG George J. Keegan, Jr., "New Assessment Put on Soviet Threat," *Aviation Week and Space Technology*, March 28, 1977, pp. 38-48; and David Binder, "U.S. General Fears Soviet Has Won Military Superiority," *The New York Times*, January 3, 1977, p. 3.
12. Nitze had been a principal author of NSC-68, the 1950 joint report by the Secretary of State and Defense on US Objectives and Programs for National Security. NSC-68 had been requested by President Truman, after the Soviet nuclear explosion of August 1949. The report underscored the aggressive nature of the

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Soviet Union and its "design for world domination" and served to provide a basis for a reversal of the US postwar policy of accommodation with the Soviet Union to a policy of confrontation and rearmament. Nitze also served as a principal author of the Gaither Report in 1957 which again pointed to the "expansionist" nature of the Soviet state and warned of the impending "missile gap." For NSC-68 and the Gaither Report, see "NSC-68, A Report to the National Security Council," republished in the *Naval War College Review*, May-June 1975, pp. 51-108; and US Congress, Joint Committee on Defense Production, *Deterrence and Survival in the Nuclear Age (The 'Gaither Report' of 1957)*, 94th Cong., 2d sess., Washington: US Government Printing Office, 1976.

13. *Common Sense and the Common Danger*, Washington: The Committee on the Present Danger, November 11, 1976, pp. 1-3.

14. Paul H. Nitze, "Assuring Strategic Stability in an Era of Detente," *Foreign Affairs*, January 1976, pp. 207, 216-217.

15. Richard Pipes, "The Soviet Strategy for Nuclear Victory," *Commentary*, July 1977, p. 25.

16. *Ibid.*, p. 26.

17. *Ibid.*, p. 29.

18. *Ibid.*

19. *Ibid.*, pp. 30-31.

20. Colin S. Gray, "Force Postures, Arms Races, and the Future of Salt," Address before the University of Southern California/US Army Russian Institute Symposium, Garmisch, West Germany, December 1978.

21. V. I. Lenin, *Collected Works*, Vol. 29, Moscow: Progress Publishers, 1965, p. 153.

22. *Pravda*, March 13, 1954.

23. *Pravda*, January 25, 1961, cited in William D. Jackson, "The Soviets and Strategic Arms: Toward an Evaluation of the Record," *Political Science Quarterly*, Summer 1979, p. 247.

24. For example, see Michael McGwire, "Soviet Strategic Weapons Policy, 1955-70," in *Soviet Naval Policy: Objectives and Constraints*, edited by Michael McGwire, Ken Booth and John McDonnell, New York: Praeger Publishers, 1975, p. 488. See also Robert Legvold, "Strategic 'Doctrine' and SALT: Soviet and American Views," *Survival*, January/February 1979, pp. 8-13.

25. See Thomas W. Wolfe, "The Communist Theory of War," *Marxism, Communism and Western Society*, Vol. 8, ed. by C. O. Kernig, New York: Herder & Herder, 1973, pp. 316-317.

26. For a sketch of the Soviet debate since the early sixties on the utility of nuclear warfare as an instrument of policy, see Raymond Garthoff, "Mutual Deterrence and Strategic Arms Limitations in Soviet Policy," *International Security*, Summer 1978, pp. 113-125. Also see John Erickson, "The Soviet View of Deterrence: A General Survey," *Survival*, November/December 1982, pp. 242-251, esp. p. 244.

27. Fritz W. Ermarth, "Contrasts in American and Soviet Strategic Thought," *International Security*, 3, Fall 1978, p. 143.

28. See Garthoff, p. 126.

29. For a survey of Brezhnev's views see Mark E. Miller, *Soviet Strategic Power and Doctrine: The Quest for Superiority*, Washington: Advanced International Studies Institute, 1982, pp. 188-189. Also see Erickson, p. 244.

30. It could be argued that there is little difference in the force postures and doctrine of the two superpowers other than what has been fundamentally a product

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of differing levels of technological development. Both have highly accurate missile systems. Both are capable of striking each other's strategic systems (although estimates vary on how successful the United States would be in striking hardened Soviet missile silos). However, Soviet declaratory policy emphasizes surprise and attacks on meaningful military targets thus suggesting a war-fighting capability, while American declaratory policy suggests an emphasis on deterrence rather than war-fighting. Nevertheless, US targeting doctrine has always included attacks on Soviet military power. Thus, perhaps the real difference lies in whether Moscow is more predisposed to a preemptive first strike than is Washington. On this point Ben Lambeth contends that Soviet military doctrine scarcely offers a hard prediction of how the Soviets would actually respond in a crisis. See Benjamin S. Lambeth, "Uncertainties for the Soviet War Planner," *International Security*, Winter 1982/1983, p. 142. Also see James McConnell, "Soviet and American Strategies Doctrines: One More Time," *Professional Paper 271*, Alexandria: Center for Naval Analysis, January 1980.

31. Dennis Ross, "Rethinking Soviet Strategic Policy: Inputs and Implications," *The Journal of Strategic Studies*, May 1978, p. 6.

32. *Ibid.*, p. 9. For a detailed discussion of the concepts of deterrence through denial or punishment, see Glen H. Snyder, *Deterrence by Denial and Punishment*, Princeton: Princeton University Press, 1959.

33. Erickson, pp. 244-245.

34. Legvold, p. 8.

35. For example, see Henry Trofimenko, "The 'Theology' of Strategy," *Orbis*, Fall 1977, pp. 498-500.

36. Lambeth, "Uncertainties for the Soviet War Planner," p. 140.

37. In the immediate postwar period through the 1950's, the American defense community's approach to deterrence often focused on ways to maintain US strategic nuclear superiority. For many defense specialists, deterrence and stability were functions of power. The nation that possessed superior strategic nuclear capabilities had the power to deter. Moreover, the power to deter born of strategic superiority extended beyond deterrence of strategic nuclear conflict to lesser conflicts. Strategic nuclear superiority was considered a useful political tool in securing US interests and objectives elsewhere in the world.

This approach to deterrence was epitomized by John Foster Dulles in his famous speech before the Council on Foreign Relations in January 1954. Referring to America's strategic superiority, Dulles informed the world that the United States would base deterrence on its great capacity to retaliate instantly and massively anywhere in the world. He also detailed the extended nature of America's deterrent capability when he stated that, "the way to deter aggression is for the free community to be willing and able to respond vigorously at places and with means of its own choosing." He contended that there was no local defense which alone could contain the mighty land power of the Communist world; local defenses must be reinforced by the threat of massive strategic nuclear retaliation.

By the late 1950's and early 1960's, however, the Soviet Union's growing strategic capability increased concern over the credibility of a deterrence based on a massive nuclear response and heightened awareness of the potential perils should deterrence fail. In the debate which ensued, some defense specialists continued to believe that deterrence could only be achieved through superiority. They concluded that the United States had to redouble its efforts to maintain a sufficient margin of superiority. Others openly discussed the potential need for preventive or preemptive

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war. See John Foster Dulles, "The evolution of Foreign Policy," *Department of State Bulletin*, XXX January 25, 1954, p. 108. For an excellent but brief survey of this period of US nuclear policy, see Herbert Y. Schandler, *U.S. Policy on the Use of Nuclear Weapons, 1954-1975*, Washington: Congressional Research Service, Library of Congress, August 14, 1975, revised November 14, 1975, pp. CRS 7-10. For a survey of the preventive/preemptive war debates of the early 1960's, see George E. Lowe, *The Age of Deterrence*, Boston: Little, Brown & Co., 1964, pp. 201-203.

38. Counterforce options are those designed to attack an adversary's military forces, especially his strategic nuclear capabilities. Countervalue options are those designed to attack population centers, industries, resources, and other such things of "value" to the fabric of society. For a review of the justification used by Secretary of Defense James R. Schlesinger for the further development of US counterforce capabilities, see his *Annual Report to the Congress, Fiscal Year 1975*, Washington: US Government Printing Office, March 4, 1974, pp. 3-6, 32-42.

39. Harold Brown, Secretary of Defense, *Annual Report to the Congress, Fiscal Year 1981*, Washington: US Government Printing Office, January 29, 1980, p. 66.

40. *Ibid.*, p. 67.

41. For example, see Trofimenko, "The 'Theology' of Strategy," p. 499.

42. For thought provoking view of the role military power plays in Soviet strategy, see Phillip A. Petersen and John G. Hines, "Military Power in Soviet Strategy Against NATO," *RUSI*, December 1983, pp. 50-57.

43. *The Military Balance 1963-1964*, London: The International Institute for Strategic Studies, November 1963, pp. 3-11.

44. *Soviet Military Power*, Washington: US Government Printing Office, 1982, p. 54. Also pp. 21-24 of the 1983 version of the booklet.

45. *Ibid.*

46. For example, see R. J. Rummel, "Will the Soviet Union Soon Have a First-Strike Capability?" *Orbis*, Fall 1976, p. 582 and Colin S. Gray, "The Strategic Forces Triad: End of the Road?", *Foreign Affairs*, July 1978, pp. 775-778.

47. See John Steinbruner, "Launch Under Attack," *Scientific American*, January 1984, pp. 37-47.

48. See John D. Steinbruner and Thomas M. Garwin, "Strategic Vulnerability: The Balance Between Prudence and Paranoia," *International Security*, Summer 1976, p. 141.

49. Matthew Bunn and Kosta Tsipis, "The Uncertainties of a Preemptive Nuclear Attack," *Scientific American*, November 1983, p. 39.

50. *Ibid.*

51. For a further discussion of these two factors, see *Ibid.*

52. *Report of the President's Commission on Strategic Forces*, Washington: April 6, 1983, pp. 7-90.

53. See Bunn and Tsipis, pp. 40-41.

54. *Ibid.*, p. 40.

55. For a thorough treatment of the civil defense issue, see John M. Weinstein, "The Strategic Implications of Civil Defense," in *The Defense of the West: Strategic and European Security Issues Reappraised*, ed. by Robert Kennedy and John M. Weinstein, Boulder: Westview Press, 1984.

56. Gary L. Guertner, "Strategic Vulnerability of a Multinational State: Detering the Soviet Union," *Political Science Quarterly*, Summer 1981, pp. 209-223.

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57. Dr. Carl Sagan, "The Nuclear Winter," *Parade Magazine*, October 30, 1983, p. 4.
58. See Philip J. Hilts, "Nuclear Winter: Catastrophe Confirmed by Soviet Scientists," *The Washington Post*, November 2, 1983, p. A8.
59. Bunn and Tsipis, p. 47.
60. There is some evidence that the USSR is currently testing a mobile single RV ICBM. See *The Military Balance 1983-1984*, London: The International Institute for Strategic Studies, Autumn 1983, p. 12.
61. Robert C. Toth, "U.S. Reliance on Nuclear Subs Being Debated," *The Los Angeles Times*, May 22, 1983, p. 1.
62. See US Congress, House, Committee on Appropriations, *Department of Defense Appropriations*, Hearings Before a Subcommittee of the Committee on Appropriations, 93d Cong., 1st sess., 1973, p. 18.
63. Footprint refers to the amount of stress placed on a runway because of the relationship between aircraft weight and the pattern of weight distribution on a runway through the landing gear. The weight/pattern of weight distribution of the B-1 places much less stress on runways, thus it can be deployed to a greater number of dispersal bases.
64. *Report of the President's Commission on Strategic Forces*, p. 12.
65. For a thorough examination of the issues, see Daniel S. Papp, "Ballistic Missile Defense, Space-Based Weapons, and the Defense of the West," in *The Defense of the West*. Also see Donald M. Snow, *The Nuclear Future: Toward a Strategy of Uncertainty*, Tuscaloosa: University of Alabama Press, 1983; Daniel Kaplan, "Lasers for Missile Defense," *Bulletin of the Atomic Scientists*, May 1983, pp. 509; and US Congress, Senate, *Department of Defense: Authorizations for Appropriations for Fiscal Year 1983*, Hearings Before the Committee on Armed Services, 97th Cong., 2d sess., pp. 4884-4904.
66. For a further discussion of this and other alternatives, see Thomas J. Downey, "How to Avoid Monad—and Disaster," *Foreign Policy*, Fall 1976, pp. 193-201.

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must modernize its strategic forces and engage the Soviet Union in arms control efforts if future strategic instabilities are to be avoided.

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